

**Ozone National Ambient Air Quality Standard Health Exceedances on May 27, 2016**

**Exceedance Locations and Levels**

On Friday, May 27, 2016, four (4) exceedances were recorded in New Jersey of the new 8-hour average ozone National Ambient Air Quality Standard (NAAQS) of 70 ppb that became effective in December 2015 (See Table 1):

**Table 1. Ozone NAAQS Exceedances in New Jersey on May 27, 2016**

STATION	Daily Maximum 8-Hr Average (ppb)	Exceeds 70 ppb NAAQS	Exceeds 75 ppb NAAQS	Exceeds 84 ppb NAAQS
Ancora State Hospital	83	Yes	Yes	
Ramapo	71	Yes		
Rutgers University	75	Yes		
Washington Crossing*	74	Yes		

\*The Washington Crossing station is operated and maintained by EPA as part of the nationwide Clear Air Status and Trends Network (CASTNET).

One (1) station also exceeded the 75 ppb 8-hour ozone NAAQS of 2008, but none exceeded the 84 ppb 8-hour ozone NAAQS of 1997. The highest 1-hour average ozone concentration recorded on May 27, 2016 in New Jersey was 90 ppb at the Leonia station, which is below the 1-hour ozone NAAQS of 120 ppb.

Friday marks the 4th day in 2016 on which exceedances of the new 8-hour ozone NAAQS of 70 ppb were recorded in New Jersey. By the 27th of May in 2015, there were a total of 2 days on which ozone exceedances were measured in New Jersey (based on the 75 ppb NAAQS of 2008), and there was one day by this same date in 2014.

There is a group of monitoring stations in designated counties of five (5) states, New York, Connecticut, Pennsylvania, Delaware and Maryland, that are included in New Jersey's ozone nonattainment areas. From this group of stations in the other neighboring states, there were two (2) exceedances of the new 8-hour ozone NAAQS of 70 ppb recorded on Friday, May 27, 2016 (See Table 2):

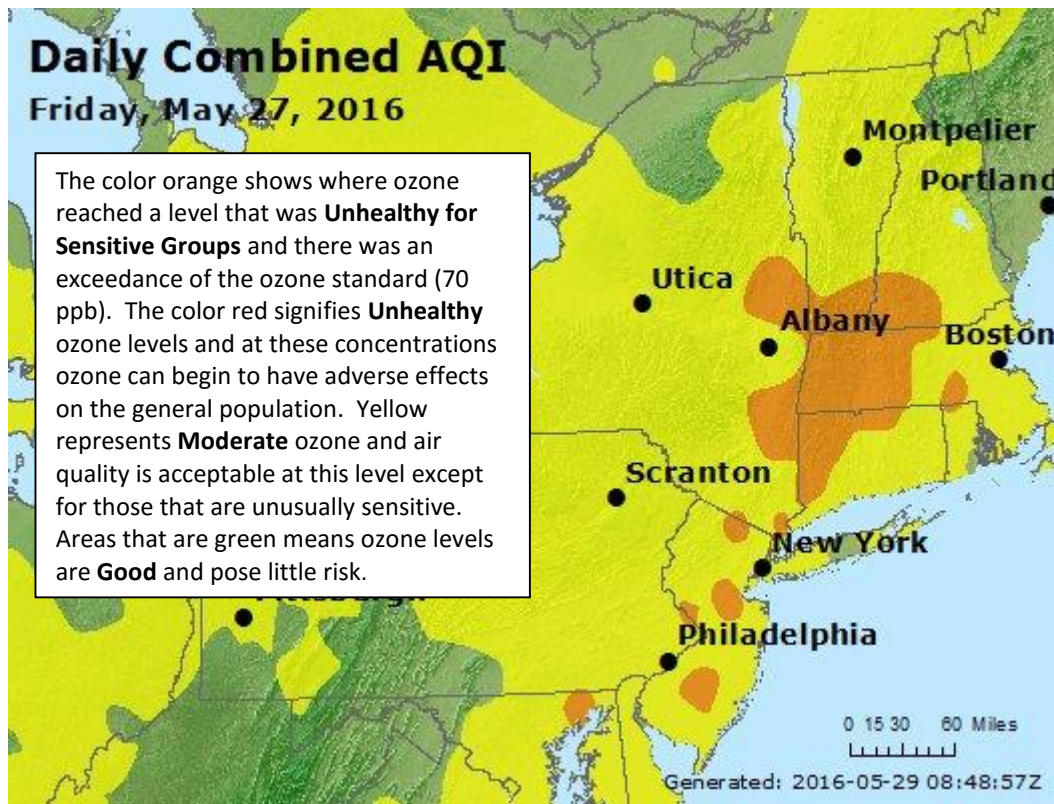
**Table 2: Ozone NAAQS Exceedances at other Monitoring Stations in New Jersey's Ozone Nonattainment Areas on May 27, 2016**

STATE	STATION	Daily Maximum 8-Hr Average (ppb)	Exceeds 70 ppb NAAQS	Exceeds 75 ppb NAAQS	Exceeds 84 ppb NAAQS
CT	Danbury	81	Yes	Yes	
NY	White Plains	71	Yes		

One (1) station also exceeded the 75 ppb ozone NAAQS of 2008, but none exceeded the 84 ppb ozone NAAQS of 1997. The highest 1-hour average ozone concentration recorded was 99 ppb at Rockland County, NY, which is below the 1-hour ozone NAAQS of 120 ppb.

Friday marks the 5th day in 2016 on which exceedances of the new 8-hour ozone NAAQS of 70 ppb were recorded in Connecticut, and the 3rd day for New York. The number of days on which exceedances were recorded in Delaware, Maryland, and Pennsylvania remains at two (2).

Figure 1. Ozone Air Quality Index for May 27, 2016



Source: [www.airnow.gov](http://www.airnow.gov)

For ozone terminology definitions see NJDEP Air Quality Planning's Glossary and Acronyms webpage: <http://nj.gov/dep/baqp/glossary.html>

### **Weather**

Meteorological data from across the region showed temperatures reached into the high 80°F's-low 90°F's, while winds were light and from the south/ southwest. A high pressure system was centered over the eastern Atlantic Seaboard leading to mostly sunny conditions across the region. The surface trough that was over the region the prior day had dissipated. High pressure systems in this location often lead to a combination of abundant sunlight, warm temperatures, and light south/southwesterly winds, that are all features commonly seen with an ozone exceedance.

### **Where Did the Air Pollution that Caused Ozone Come From?**

Figures 2, 3, and 4 show the back trajectories at different wind heights for selected monitored exceedances on May 27, 2016. The figures illustrate where the winds came from during the 48 hours preceding the high ozone event. The six (6) monitoring stations with 8-hr ozone exceedances were chosen to run back trajectories. The selected sites and the maximum 8-hr ozone levels recorded are listed in Table 3 below.

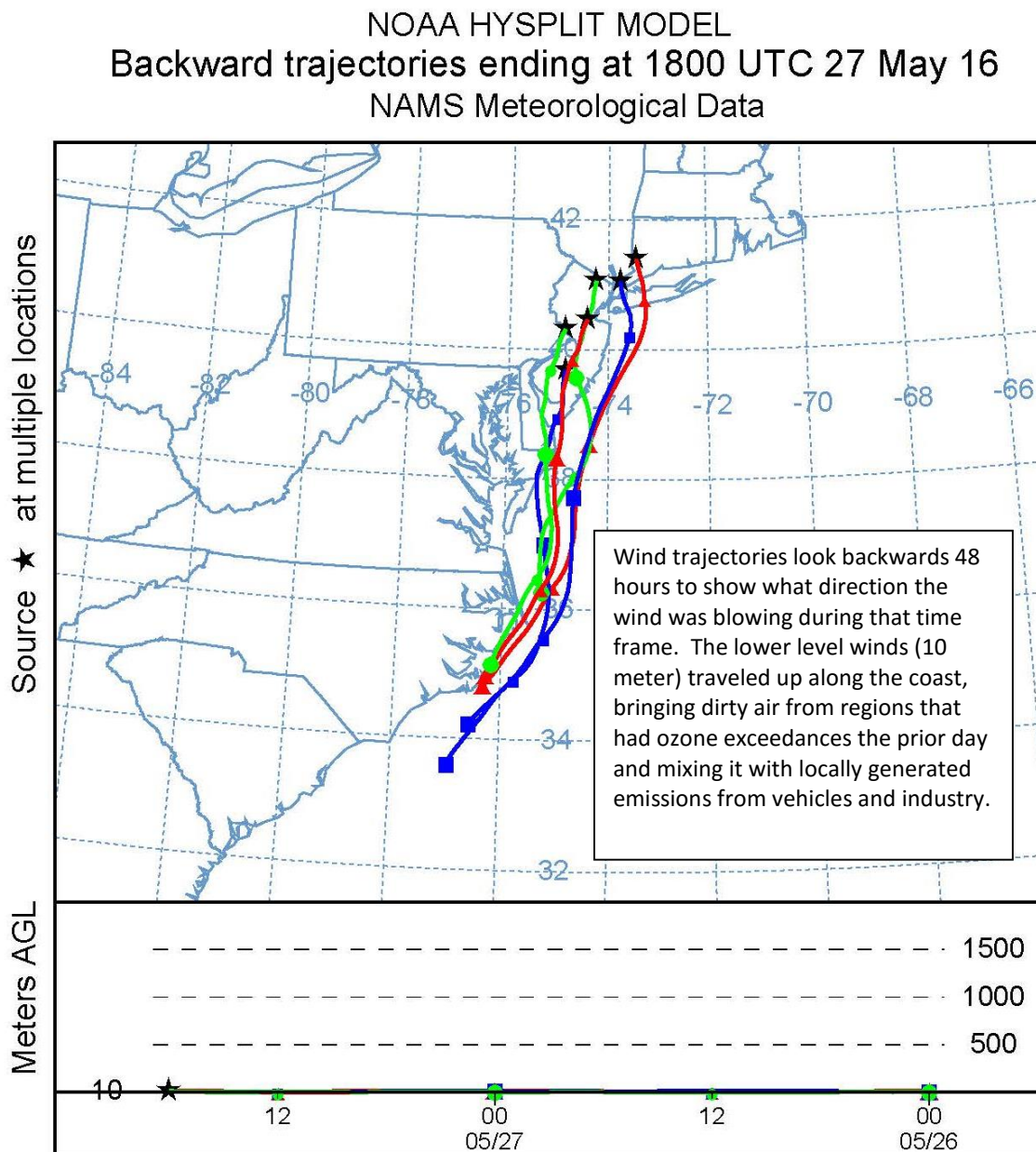
**Table 3. Monitoring Stations with 8-hr Ozone Exceedances that Were Selected to Run 48-hr Back Trajectories**

<b>Agency</b>	<b>Site Name</b>	<b>Maximum 8-hr Ozone Conc. (ppb)</b>
CT	Danbury	81
NJ	Ancora Hospital	83
NJ	Ramapo	71
NJ	Rutgers Univ.	75
NJ	Washington Crossing	71
NY	White Plains	74

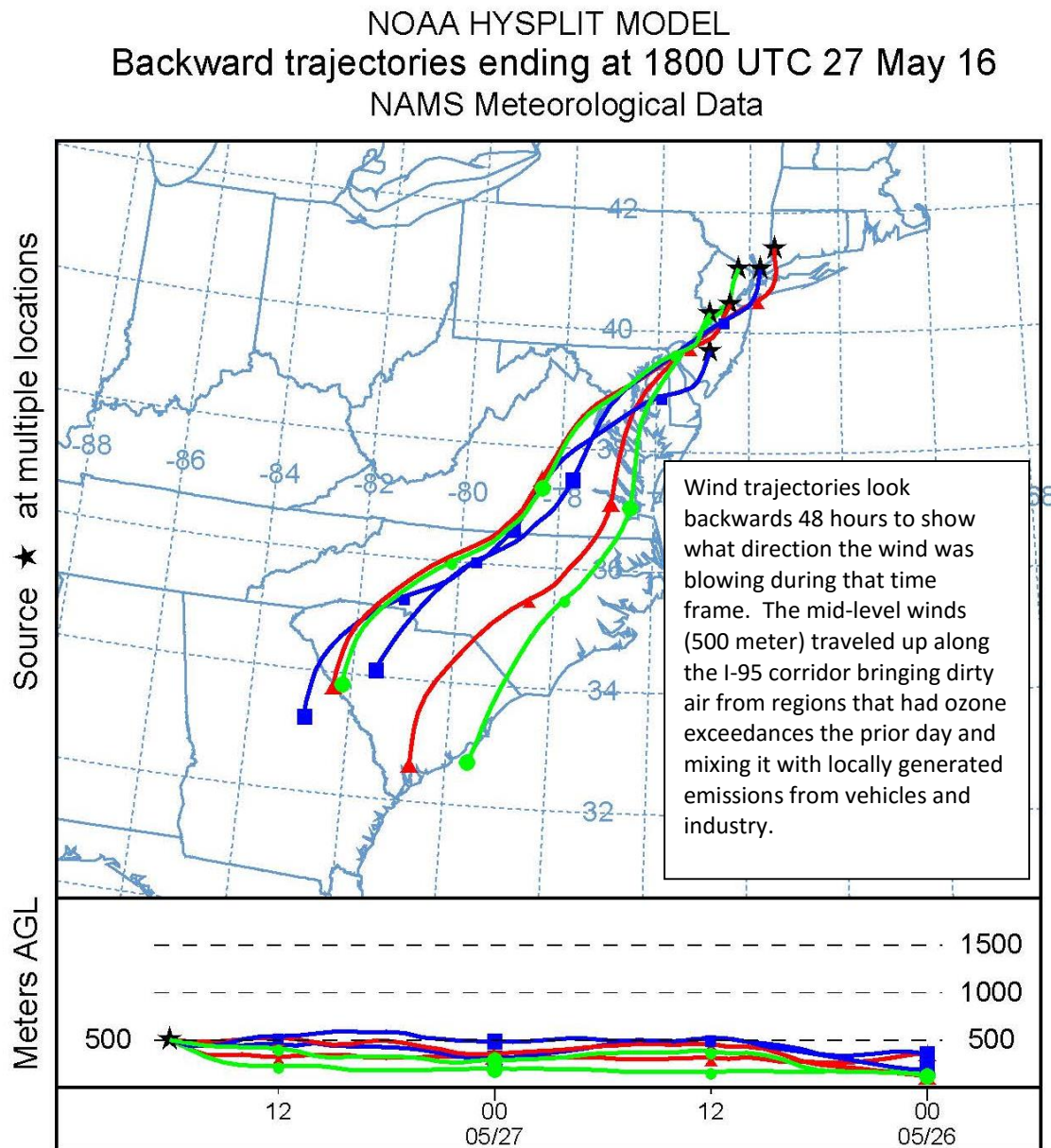
The back trajectory maps (Figures 2 and 3) for the low level (10 meter) and mid-level (500 meter) winds illustrate similar transport pathways to the exceedance monitors. Winds traveling to monitors located in New Jersey's nonattainment areas traveled along the coast and the I-95 corridor. The winds brought in dirty air from a region that had ozone exceedances the day before, and combined with local emissions from cars trucks, and industry. The 1500 meter winds (Figure 4) came from a more westerly flow across the Ohio River Valley, bringing additional pollution from power plants. Figure 5 illustrates the ozone exceedances recorded in the Mid-Atlantic and Northeast regions on May 26, 2016, the day before the high ozone event in our area.

The long range transport from the Ohio River Valley mixed with local pollution created from cars, trucks, and industry along the I-95 corridor to cause the regional ozone exceedance event that occurred on May 27, 2016. This is the third day in a row that there have been widespread ozone exceedances across the region.

Figure 2. 48-hour Back Trajectories for May 27, 2016 at 10 meters



**Figure 3. 48-hour Back Trajectories for May 27, 2016 at 500 meters**



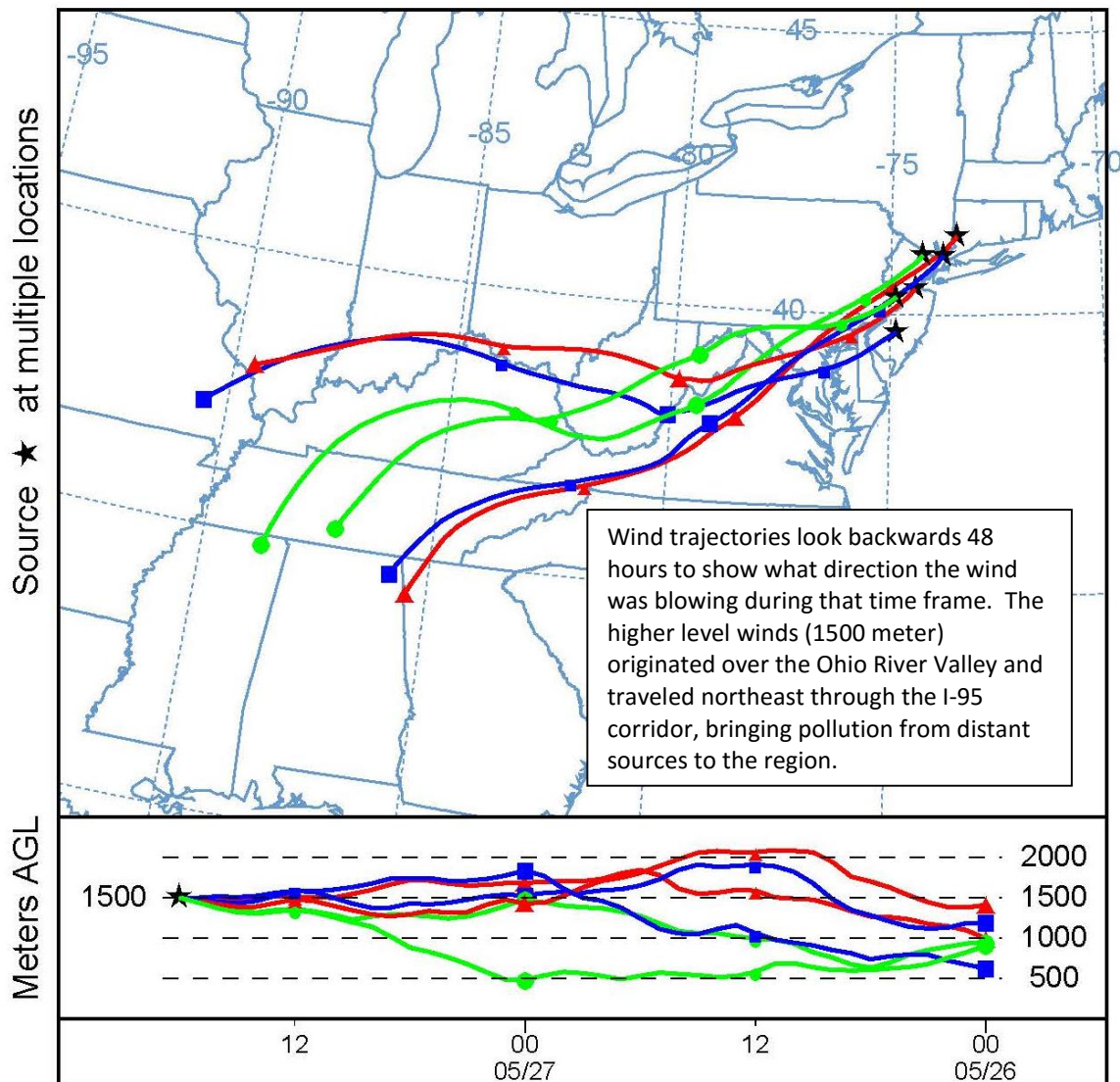


**Figure 4. 48-hour Back Trajectories for May 27, 2016 at 1500 meters**

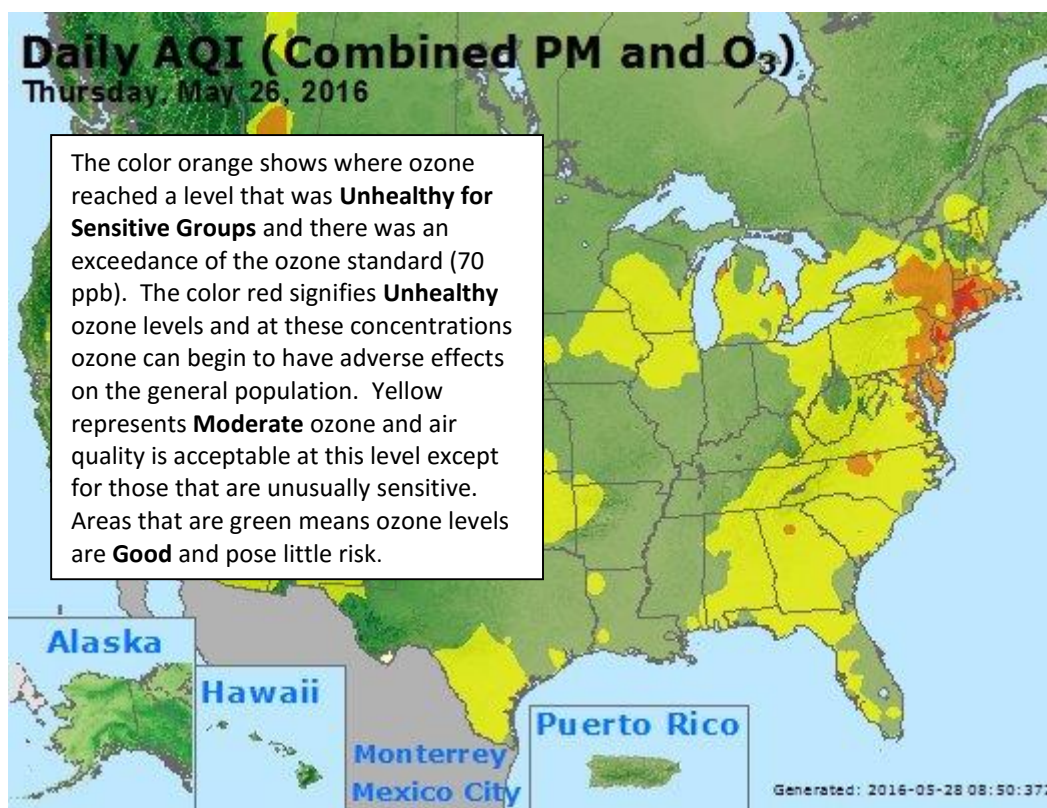
NOAA HYSPLIT MODEL

Backward trajectories ending at 1800 UTC 27 May 16

NAMS Meteorological Data



**Figure 5. Ozone Air Quality Index for the Mid-Atlantic and Northeast Regions on May 26, 2016**



### **How is Smog Created?**

Ground-level ozone, also known as smog, is an air pollutant known to cause a number of health effects and negatively impact air quality and the environment in the state of New Jersey. Smog is formed when oxides of nitrogen (NO<sub>x</sub>) and volatile organic compounds (VOCs) react in the presence of sunlight. Smog can irritate any set of lungs, but those with lung-related deficiencies should take extra precautions on bad ozone days.

### **Find Out About Air Quality Every Day**

The “What's Your Air Quality Today?” page at <http://www.nj.gov/dep/cleanairnj/> tells you how to sign up to receive notifications and find out when your local air has reached unhealthy ozone levels.